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## ORIGINAL ARTICLES.

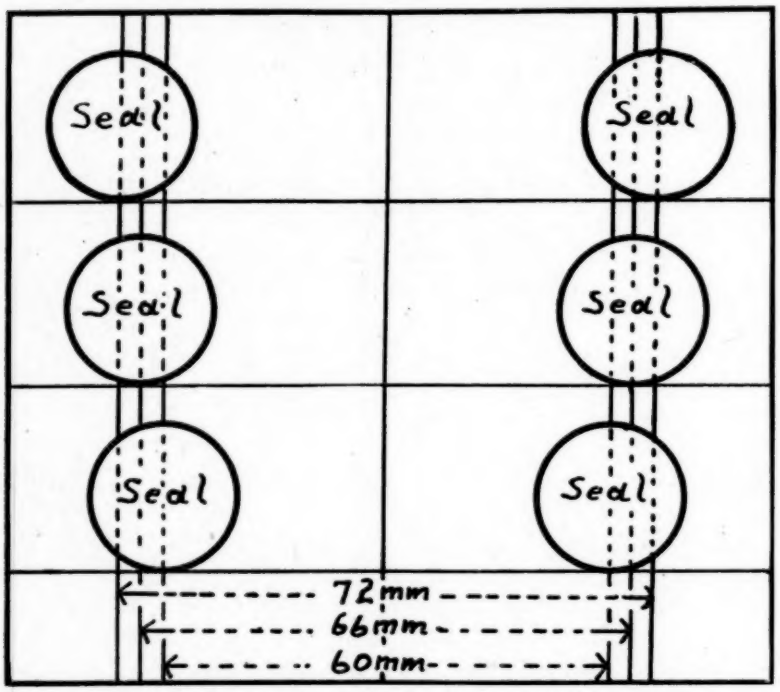
### SOME CONVENIENT STEREOSCOPIC FIGURES.*

By Wm. E. Shahan, M.D.,
ST. LOUIS, MO.

With cross-eyed children a perfect cosmetic result is often obtained by the use of correcting glasses for the attendant hypermetropia. In these cases it is always desirable to know whether or not the crossing eye has simply turned into a position where it looks straight, without having gained its normal function of binocular vision. If we can make sure that the child has stereoscopic vision, we can feel reasonably certain that the eye will always remain useful and straight. If we cannot make sure of this, we can never know what the usefulness or position of the eye may be in later life. In tests with children, stereoscopic figures should be reduced to their simplest terms, and should be of such a design as to attract the child and enlist his active cooperation. Such figures can be easily obtained at various paper stores, as for instance the Denison Mfg. Co. They come in the form of gummed seals of various sizes and numerous multicolored designs. Some are Christmas and New Year seals, some are fantastic Hallowe'en designs, such as witches, black cats, pumpkin heads, etc. Others are conventional designs such as hearts, stars, flags, etc. With a collection of these, a number of stereoscopic charts can be constructed that will excite interest and co-operation, and elicit stereoscopic vision if the patient has any.

*Read before the St. Louis Ophthalmological Society, Feb. 22, 1915.

These charts are simply constructed: have a number of blank cards cut of a size that will fit into the holder of your stereoscope. Through the center of each of these draw a vertical line. On either side of this vertical line draw three parallel lines, one 30 mm. from the central line, another 33 mm. from it, and the last 36 mm. from it. There will then be three pairs of parallel lines measured from the central line, the outer pair will be 72 mm. apart, the middle 66 mm. apart, and the inner 60 mm. apart. Six identical seals are used for each chart, two of them are placed




Scheme for Arrangement of Figures. All lines to be afterwards erased.

over the outer lines, two over the middle ones, and two over the inner one, each pair being on the same horizontal line. The seals will then be respectively 72, 66, and 60 mm. apart in horizontal lines. In the vertical direction there should be about 5 mm. between each pair (diagram illustrates a convenient arrangement). When these, arranged in this way, are observed through the stereoscope by a patient with binocular vision, the seals farthest apart will appear largest and farthest away from the patient, while those nearest together will appear nearest the

patient and smallest. The intermediate ones occupy an intermediate position. In using these tests with children, simple direct questions should be asked. "Which is the farthest away?" "Which is the closest to you?" "Which is the biggest?" "Which is the littlest?" "Is the top one straight over the bottom one, or a little to one side?" The answers to these questions will indicate definitely whether the patient has or has not stereoscopic vision.

The theory of this is well known, and may be easily deduced from a study of stereoscopic photographs. If the distance between any two identical points on an object in the back ground is measured, and also the distance between any two identical points on an object in the foreground, it will be found that identical points in the foreground are nearer together than those in the background. The effect of solidity, perspective, etc., is therefore obtained solely by the different degrees of convergence required to bring corresponding parts of the two pictures together. If the pictures are in a principal focal plane of the stereoscopic lenses, pencils entering the eyes from them will enter as parallel pencils, and accommodation will play no part.

If, however, the pictures are brought nearer the lenses, accommodation will be brought into action and the stereoscopic effect will be accentuated.

In the ordinary stereoscopic photographs, the difference in the distance apart of similar points in the foreground and in the background, is not often more than 2 mm. This may be designated as the stereoscopic difference and is a measure of the stereoscopic effect of the pictures. Photographs in which the stereoscopic difference is no greater than 0.20 mm. appear almost flat. It was found by experiment with the above seals that a stereoscopic difference of 6 mm. was easily within the power of convergence, and gave marked stereoscopic effect. By using the intermediate pair as a sort of stepping stone a total difference of 12 mm. was found to be easily practicable, and gave very marked stereoscopic effect. If the intermediate pair is not used, the abrupt jump of 12 mm. is too violent for the power of convergence, and no stereoscopic effect is obtained. More than three pairs also crowd the power of convergence too much. The fact that the seals farthest apart appear larger than the others, is a visual illusion. In ordinary life, if we look at an object in the foreground, and it makes upon our retina an image of the same size as another object in the background, we know at once that the object in the background is larger than the one in the fore-

ground. The seals placed nearest together require the greatest convergence, and appear to be in the foreground, while those farthest apart require least convergence, and appear to be in the background. They are all the same size, and the same distance from the eyes. The images formed by them on each retina are therefore the same size. In consequence of this, those in the foreground are judged to be smaller than those in the background.

This apparent difference in size, with a stereoscopic difference of 12 mm., is so marked that it is perfectly proper to ask a patient directly: "Which is the biggest?" without explanation or apology for the deception.

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## OPTIC NEURITIS OF NASAL ORIGIN.*

(Report of Two Cases.)

By Wm. E. Shahan, M.D.,
St. Louis, Mo.

The intimate and important relationship existing between pathological conditions of the visual organism and pathological conditions of the nasal accessory sinuses is being widely studied, and is producing excellent results. It is already certain that numerous cases of optic neuritis that formerly would have gone on to atrophy, are being permanently cured. Also we can think of other and more hopeful things than brain tumors at sight of swollen nerve heads. To go into the literature of the subject in detail, would be to travel beaten paths. It will be sufficient to refer to the following articles: An article by Dr. A. de Kleyn, in A. von Graefe's *Archives für Ophthalmology*, vol 75, p. 513, 1910, dealing chiefly with retro-bulbar neuritis; and another article with Bibliography by Dr. J. Jung, in the same journal, vol. 75, p. 362, 1910, dealing with a case of choked disc and one of retro-bulbar neuritis, the latter being absolutely blind for nine days and making good recovery. Also to a case reported by Dr. M. H. Post in the American Journal of Ophthalmology, June, 1913; to an article by Dr. A. Onodi, in the *Zeitschrift für Augenheilkunde*, March, 1914, in which the intimate anatomical

*Read before the St. Louis Ophthalmological Society, Feb. 22, 1915.

relationship of the optic nerves to ethmoidal and sphenoidal cells is shown by illustrations and mishaps occurring in operations in these regions enumerated; to a review by Dr. J. W. Charles, in the *Annals of Ophthalmology;* of an article by Marbreiter, dealing chiefly with enlargements of the blind spot; an article by Dr. A. E. Ewing and Dr. Greenfield Sluder, read before the American Ophthalmological Society, led to extensive development of this subject in St. Louis.

The cases recently coming under my observation were as follows:

CASE I.—Mrs. J. D. came to consult Dr. Ewing June 21st, 1914, and owing to his absence came under my care. Nine days previously she began having severe headache just above her eyes, and worse on the left side. For five days this gradually got worse. During this time she dosed herself with various drugs, including a "painkiller" she got from a druggist. She then consulted an ophthalmologist, who gave her more medicine, and also such a gloomy prognosis that she left him after a couple of days. Her headache began to diminish, and as it diminished the sight of her left eye also began to fail. This coincidence suggested to me that her headache was a pressure phenomenon, and that the pressure had been relieved by the giving way of the walls of some accessory nasal cells upon some part of the left optic nerve. When she came to our office she had been free from pain for three days; V. O.D. with+75 cyl. ax. 120°, 20/15; V. O.S. fingers at one foot; field O.S. largely lacking below and centrally; field O.D. normal. Ophthalmoscope showed the discs about alike, nothing definitely abnormal, possibly slightly elevated and hyperemic at their upper margins. Fundi otherwise normal.

June 21st, the same day, she was referred to Dr. Sluder. He took several days to study the case, and reported June 25th: left sphenoidal abscess. That afternoon she was operated on.

July 2nd—V. O.S. 3/30; field about normal in size, but contains a rather large paracentral scotoma.

July 6th—V. O.S. 20/48+.

July 13th—V. 20/38+, paracentral scotoma gone; field about normal.

August 21st—V. 20/19, O.S., disc slightly paler than disc O.D.

December 10th—V. 20/19+, disc still slightly pale, but patient thinks the eye is as good as it ever was. She is still under observation.

CASE II.—Was radically different from Case I, in that it was a violent optic neuritis of the choked disc type.

Mrs. H. H. C. came to me November 22nd, 1914. Five weeks previously she had begun having headaches which lasted two or three hours at a time at intervals of 3 or 4 days. Three weeks previously she had consulted an ophthalmologist, who under a mydriatic had prescribed glasses: O.D.+.37 sph.+25, cyl. ax. vert.; O.S. +25, sph.+50 ax. vert. Since then she has had only one headache. Two weeks ago, after a day of feeling as if "grippe" were impending, she had a severe pain O.D. accompanied by swelling of the lids. Two hours later a similar but milder attack O.S. Pain disappeared in about two hours, but swelling of lids persisted for 6 days. There was no falling off in vision noticeable, but a severe "cold on the lungs," during which she coughed up "much yellow and almost black stuff." When she came to see me, this had about ceased.

November 22nd, the day she came, V. O.D. 20/48+; O.S. 3/15 eccentric. Ophthalmoscope showed disc O.D. swollen about 6 D and disc O.S. swollen about 7+ D. Both discs and a cirmcumscribed area about the discs showed small hæmorrhages and gray exudates. There was no visible limitation of voluntary ocular movements. When the eyes were at rest, however, O.S. turned inwards. By Maddox test this amounted to 23° esophoria at 20 feet. That same day I referred her to Dr. Greenfield Sluder for rhinological examination. The fields had shown no abnormality except greatly enlarged blind spots, in the case of O.S. extending into the macular region.

November 23rd—Dr. Sluder reported sphenoidal suppuration. Referred to Dr. F. B. Hall for skiagram.

November 24th—Skiagram shows normal sella turcica with normal anterior and posterior clinoid processes. Referred to Dr. M. A. Bliss for neurological examination. Later the same day Dr. Bliss reported no evidence of intracranial tumor. Still later blood was taken by Dr. Chas. L. Klenk for Wassermann test.

November 25th—Wassermann reported negative, with a question mark, by Dr. Klenk. At this time V. O.D. was 20/75+, O.S. 20/150. Disc O.D. was swollen about 6 D and descended gradually to a normal level near the macular region. The margin where the swelling reached the level of the eye ground was marked by a well defined circle beyond which the eye ground redder by contrast, appeared normal. The veins were possibly slightly tortuous, but there was absolute freedom from hæmorrhage or exudate beyond this limiting circle. The picture of the fundus O.S. was the same but greater in degree. The swell-

ing was about 7 D. with more hæmorrhagic areas and exudates within the limiting circle about the swollen disc. The exudate on the temporal side of the swelling in either eye was of the stellate form often typical of retinitis albuminuria. This afternoon Dr. Sluder operated on left sphenoidal sinus.

November 27th—V. 20/60+ O.D.; 20/60+ O.S.

November 28th—Vision unchanged, diplopia gone. Maddox test gives esophoria 5° at 20 feet. Scotoma O.S. much smaller. Swelling 4 D O.D.; 6 D O.S.

November 30th—V. 20/38 O.D.; 20/60+ O.S., esophoria 3° at 20 feet.

December 4th—Swelling 5 D O.D.; 6 D O.S.; numerous white patches in whole edematous area R. and L. Urine analysis negative.

December 5th—Right sphenoidal sinus operated on. From that time to January 28th, when the patient was last seen, the history has been one of progressive improvement. The hæmorrhages disappeared. The areas of exudate had nearly gone, what was left giving the impression of melting snow. The swelling had subsided to not more than 3 D R. and L. Refraction was O.D. +37 cyl. ax. vert. V. 20/19; O.S. +.50 cyl. ax. vert. V. 20/24+.

No further doubling. Patient feels perfectly well.

The swelling of the eyelids occurring early in the disease, we attributed to interference with the ophthalmic veins as they pass through the sphenoidal fissure nearest the sphenoidal cells. The abducent nerves pass through the sphenoidal fissure just external to the ophthalmic veins. The inflammatory attack was more violent on the left side than on the right and extended far enough outward to involve the left abducent nerve, causing the diplopia and visible converging strabismus for a few days.

The patient lives a long distance from St. Louis and is to report in March.

# AN INTRAOCULAR ANGIOMATOUS SPINDLE CELL SARCOMA WITH BONE FORMATION. PROBABLE APLASIA OF THE OPTIC NERVE.

By Adolf Alt, M.D.,
ST. LOUIS, MO.

The eye the somewhat peculiar conditions of which I wish to describe in the following was given to me by Dr. M. W., who had removed it from an idiotic girl, about 27 years old, at one of our public institutions, on account of its great painfulness. It was the right eye. The patient's left eye had by somebody else been removed previously for unknown reasons. No history of the case was obtainable. The eye was absolutely blind and protruded between the lids and it was enucleated solely on account of the pain the patient complained of with the diagnosis of a painful total staphyloma.

The hardened eyeball had a peculiar spindle shape. Its antero-posterior diameter measured something over 3 centimeters; at the æquator it was about 1¾ centimeters. It felt hard like a solid tissue.

When I cut it in two, this was found to be the case. The whole interior of the eyeball was one solid mass in which no details of the tissues of the eye could be made out. In its anterior part and about the centre of the mass numerous smaller and larger cavities could be seen, and near the probable former site of the ciliary body down and outwards there were deposits of lime and probably bone tissue. This necessitated decalcification before I could make sections of the eye.

The foreign tissue, as was macroscopically seen, fills the whole eyeball, being all around in close and apparently firm connection with the stretched sclerotic and in front with scar tissue which has replaced the cornea. There is nowhere a break to be found in the continuity of the hard membranes through which the foreign tissue might have reached the outside of the eyeball. Even at the site of the optic nerve entrance, there is no sign of an opening in the sclerotic. The crystalline lens seems to have disappeared.

The mass of the foreign tissue on closer microscopical examination proves to be a spindle cell sarcoma. Its cells, especially in the posterior parts, are densely packed and arranged in the swirls usually found and so characteristic of spindle cell sarcoma. In other parts they are more or less infiltrated and

pressed apart by an œdematous fluid, and here and there are necrotic parts which hardly take up any stain.

In the center of the tumor and in the anterior parts, where macroscopically numerous smaller and larger cavities were seen, these are found to be mostly formed by bloodvessels. They are of very different sizes, some evidently enlarged veins, others large and smaller and smallest arteries. The sections cut them at all angles, so there must have been all sorts of irregular convulsions, in fact a mixed angioma. (See Fig. 1.)

By this mixed angiomatous tissue the spindle cell strands of the sarcoma are pressed apart to such an extent that they appear as by far the less important tissue in this portion. The

Fig. 1.

bloodvessel walls are plainly visible and in places show some lime deposits. There are no blood spaces without walls as we are wont to find in sarcomata. Some of the vessels are filled with red blood cells, others contain a fluid which stains red with eosin, but no red blood cells. It is impossible to trace this angiomatous portion of the intraocular tumor to its point of origin.

There is a small number of other cavities which are separate from those due to bloodvessels. They lie in the tumor tissue and contain small quantities of a tissue which proves to be vitreous body. It is easily recognized by the condensed fibrous network belonging to the vitreous body.

Nowhere is there any trace of the retinal tissue to be seen.

While tumor tissue replaces the choroidal tissue to such an extent that no trace of it can be found, there is an interrupted line of pigment epithelium running almost parallel with the sclerotic and somewhat removed from it in the posterior part of the eye. The pigment seems in places within cells, in others it lies free between the tumor cells.

Although the tumor tissue is very dense in this part of the eye it, also, is traversed by numerous bloodvessels.

I sought in vain for the optic nerve entrance, or a place which might have been at some time the optic nerve entrance. The dense and stretched sclerotic tissue covers the posterior pole of

Fig. 2.

the eyeball in all the sections, and there is nothing suggestive of an optic nerve entrance—if there ever was one—unless it is a number of ciliary bloodvessels and nerves which enter the sclera at the posterior pole.

Some uveal pigment can be followed around lining the inner surface of the sclerotic in front of the æquator and the cornea, the latter the only reminder of an iris. No trace of a ciliary body is visible.

In the lower outer part, probably in the region of the former ciliary body, there is a considerable mass of bone tissue with bone marrow; in its neighborhood there is some osteoid tissue

and there are some lime deposits. A number of lime deposits and small bone particles are found in different places, but they are not in the interior of the tumor; they lie always where uveal tract should be, if it was not replaced by the tumor tissue. (See Fig. 2.)

Close to the larger bony mass lies a remnant of the crystalline lens. With one side it is closely applied to the bone; on the other it is distinctly separated from the tumor tissue by a sharp line, which, I think, is a remnant of lens capsule; and in some sections it seems even to be still lined with some anterior capsular epithelium. The lens contents of this sac consist of the enormously swollen cells with a more or less central nucleus as we are wont to find them in cataracts. (See Fig. 2.)

Of course, it is impossible to say just why this little portion of the lens tissue has escaped in the general ruin, but it is probably due to the remnant of capsule which seems to surround it. It, the vitreous body and the pigment remains are in reality the only portions of the normal tissues of the interior of the eyeball which can still be recognized.

I do not think I am mistaken in assuming that in this case there must have been a total aplasia of the optic nerve. Certainly I have not been able to find any trace of one. Where in the norm the optic nerve penetrates the sclerotic and choroid there is a slight teat-like projection of the dense but thin sclerotic containing tumor tissue, but absolutely closed backwards. Yet, the usual ciliary bloodvessels and nerves enter the sclerotic and the tumor tissue replacing the choroid. Some of the venous bloodvessels are very large and distended.

Aplasia of the optic nerve has been reported in literature but two or three times, and as far as I know no histological examination of such a case has been made. It is very unfortunate that in this case no history is available.

# BLEPHAROTOMIA EXTERNA DURING CATARACT OPERATION.*

By Th. Axenfeld,
FREIBURG.

In cases with narrow palpebral fissure, especially when this is combined with tightness of the eyelids, which can with difficulty only be drawn away from the globe and when the anxious patient is inclined to squeeze them, I have during the last few years after the insertion of the Desmarres lidholder cut the external canthus including the orbicular muscles and followed this immediately by the extraction of the cataract. A few minutes previously, as I do usually when making canthoplasty, a small quantity of novocain-suprarenin was deeply injected under the skin of the outer canthus (ampules of the Hoechster Farbwerke). Since the conjunctival sac has been anyhow anæsthetized, the cutting of the angle of the lids is painless; no profuse hæmorrhage takes place and could be easily stopped if it did occur. In order to have no after-hæmorrhage the wound is touched with perhydrol.

The speculum remains in position to the end of the operation. I have never closed the wound by a suture. The margins of the wound covered with the ointment heal smoothly in the shortest time under the bandage, which I always apply during the first days. I have never seen an after-hæmorrhage; never has, as might perhaps be expected, the splitting of the lids interfered with the after-treatment of the cataract operation. Opening the eye when changing the bandage and instillations could be done without pain or difficulties.

I want to add right here that blepharotomia externa during cataract operation is of great usefulness also in another case. We all know the not infrequent old patients in whom the pulling apart of the lids with the speculum raises the stretched skin of the external canthus, or even the neighboring skin, to such an extent in front of the plane of the corneal incision that it becomes difficult and may even become impossible to make the section at the corneal periphery without touching the skin with the blade of the knife. This may especially be the case when the globe does not protrude much from the orbit or even lies abnormally deep, the more so when this is combined with a relative smallness of the palpebral fissure.

*Klin. Mstbl. f. Augenheilk., January, 1915.

Different ways have been recommended to overcome this. An assistant may try from the temporal side to pull with the finger or a tenotomy hook the raised fold, or the external canthus temporally backwards. This can be done in low grades. In the higher grades, however, this encheiresis is not fortunate, because it will naturally increase the tension of the lids; the hand or the hook may, furthermore, get into the way of the operator. Bayonette shaped knives do not make these difficulties any easier; because the puncture at the correct place is not made easier by the bend in the knife, rather the reverse. In cases of true enophthalmus, in which the orbital margin, too, was in front of the plane of the section, I have a few times made use of a procedure which resembles the old Daviel operation: puncture at the corneal margin with a small bent lance knife, which can be easily used in the depth, and enlarging the section to both sides with scissors curved on the flat. Such a procedure should, however, be applied from necessity only and in exceptional cases.

Another help is the one proposed by Angelucci (*Arch. di Ottalmol,* 1897, V, p. 71), namely, fixing the bulbus for the puncture by inserting the fixation forceps into the tendinous insertion of the superior rectus. Angelucci mentions especially as an advantage of his method that the bulbus can be pulled forward. This technique has not been generally adopted.

v. Blaskovicz and Elschnig (*Klin. Mtsbl.,* LII, 1914, p. 504, and *Zeitschr. f. Augenhlk.,* XXVIII, 1912, p. 285; *Klin. Mtsbl.,* LII, 1914, p. 262) have recently recommended in this journal their bridle suture through the tendon of the superior rectus in place of Angelucci's fixation. I do not want to deny that in this manner the globe can be more easily reached in the presence of the difficulties which I have mentioned, while at the same time it is fixed, and that with untrained individuals who do not look downward much is gained concerning the direction of the eye. However, the disagreeable raising of the skin at the outer canthus if there is no high grade enophthalmus, with the plane of the section lying behind the orbital margin, the blepharotomia externa, as described above, is of greater advantage.

The idea of temporarily enlarging the palpebral fissure for a number of operations on the eyeball is quite natural and has previously been applied. In 1875, J. V. Solomon (*Lancet,* p. 167, cited by Czermak-Elschnig, 2d edition, 1908, Vol. II, p. 440) has proposed to incise the lower lid about 1 cm. deep ver-

vertically, 5 mm. nasally from the outer canthus; Chessire (1873, *Med. Times and Gazette*, XLVI, p. 398) cut through the outer canthus horizontally or subcutaneously through the muscle alone. Yet, Czermak-Elschnig state: "In practice one will hardly perform such a bloody and painful method." Bleeding and pain with local anæsthesia do now no longer count. As far as I know, however, nobody has proposed this combination in recent times. It may even now be argued whether it would not be better to enlarge the palpebral fissure in these cases, a regular canthoplasty, with stitching of the conjunctiva into the angle of the wound a few weeks before the extraction is performed. An extra operation is, however, for our old cataract patients something very disagreeable; the irritation produced in the conjunctiva by a canthoplasty may last weeks, and, finally, it may not, as a rule, be our desire to enlarge the palpebral fissure permanently, especially not when only one eye is operated on.

Done at one sitting with the extraction, the blepharotomy which heals at once is hardly felt by the patient as a marked complication, and the temporary slitting of the orbicular muscle which loosens the lids may, especially in anxious, intractable old individuals—unless we should decide on general narcosis—make the operation very much surer and easier, so that the needle puncture for the local anæsthesia is more than counterbalanced. It is astonishing how loose the lids are during the operation.

One or the other of our modern operators may, perhaps, have used this method. I do not know of any similar proposals in modern times; on the contrary, all whom I asked, have answered me that they had never made or seen made a blepharotomia externa with a cataract operation. There is evidently a certain reluctance to "complicate" the cataract extraction by such a skin section. Yet there is no complication, either in a technical or an aseptic sense; all of the cataract operations made by me in this manner have healed smoothly and without complication.

As I stated above, a part of the difficulties which I mentioned as having caused me now and then to make a blepharotomia externa, can of course be diminished or removed by general narcosis. Yet, not all of them. In several cases of a very narrow palpebral fissure and relatively deep-seated eyeball, when the skin at the external canthus became raised, I made a blepharotomia in spite of the general narcosis. In such cases an easier access may be especially desirable, because during narcosis on dangerous eyeballs for fear of vitreous body prolapse, every pulling and

pressure must be avoided. Thus a short time ago I have extracted a complicated cataract after sympathetic ophthalmia under narcosis with a broad blepharotomy, which without this I could not have extracted at all.

Of course, this helpful procedure may be used also in other operations on the eyeball (difficult iridectomies, trephining, etc.), yet this will probably happen rarely, since the technical execution of these operations in a small locality, even with a deep-seated eyeball, is much easier than a correct cataract extraction with a large section.

I need hardly insist here that it was only in exceptional cases of cataract extraction in which I made a blepharotomia externa. When, however, the necessary indications for it are present, the combination of the two procedures need not be feared in any way.

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## ANNOUNCEMENT.

The Colorado Ophthalmological Society is arranging for an Ophthalmological Congress, to be held in Denver, July 22nd and 23rd, 1915, to which all ophthalmologists are invited.

# MEDICAL SOCIETIES

## TRANSACTIONS OF THE PHILADELPHIA POLYCLINIC OPHTHALMIC SOCIETY.

January 14, 1915.

*The Symptomatology of Acute and Chronic Retrobulbar Neuritis.* —Dr. William Zentmayer.

As Dr. Reber has said, retrobulbar neuritis may be considered under two heads, acute and chronic. It is, however, not accurate to consider the term "chronic retrobulbar neuritis" as synonymous with "toxic amblyopia", as it is now well understood that certain of the agents which produce amblyopia, e.g., methyl alcohol and quinine, exert their toxic influence upon the ganglion cells of the retina, such changes as may be present in the optic nerve probably being secondary. Therefore we will omit a consideration of these and other drugs which act in this manner.

Dr. Zentmayer detailed the symptoms of the two varieties and emphasized the fact that the phænomena of the acute did not present the constancy of the chronic type. The differential ætiological diagnosis presented many difficulties. In the acute type the existence of the enlarged blind spot together with a central scotoma would indicate a sinusitis. A sudden marked loss of vision with an early sign of either obstruction to the central retinal circulation or beginning papillœdema would be suggestive of an intravaginal hæmorrhage. A similar onset with associated papillitis would indicate an orbital affection; involvement of one of the ocular muscles with considerable retrobulbar pain would point to periostitis. These points concern only the ocular symptoms. The diagnosis is aided by the history, the results of laboratory tests and roentgenology.

In a chronic retrobulbar neuritis, if the scotoma is absolute and transient and there is a marked discrepancy between the field findings and the ophthalmoscopic changes, disseminated sclerosis would be indicated. Uhthoff holds that a differential diagnosis between tobacco and ethyl alcohol amblyopia cannot be made from the ocular symptoms. However, in the presence of retinal hæmorrhages, which occur in some cases, and other signs of retinal angiosclerosis it is probable in a mixed toxæmia that alcohol has been the most important factor in the case. The

question of the relation of arteriosclerosis to tobacco-alcohol amblyopia is of considerable interest. Among those who have especially called attention to it is Scalinci. The age at which amblyopia due to these agents occurs, the fact that there is often a marked difference in the degree of involvement in the two eyes, that the blood pressure is often much increased, that there are evidences of widspread arteriosclerosis, are points brought forward by this author. Kruger has found evidences of retinal sclerosis involving principally the macular twigs in most cases. To these findings I would add retinal hæmorrhages which I have found in at least three cases.

As to the phænomena of retrobulbar neuritis. Several theories are advanced to explain the nyctalopia, the most plausible being that the production of the visual substance can more readily keep pace with its expenditure in subdued than in bright light. The biologic axiom of Erdinger "that a high degree of functional activity involves an increased morbidity" has been suggested as the cause of the susceptibility of the papillomacular bundle to toxic agents. A second theory advanced is the poorer supply of blood to the macular region and a third reason given is that the cones are connected with the polar cells by only one fibre whereas the rods have several.

It is interesting to note that Ronne's anatomic findings in several cases of tobacco-alcohol amblyopia indicate that the process is a degeneration of the papillomacular bundle and not an interstitial infection.

*The Hereditary Form of Retrobulbar Neuritis (or Leber's Disease).*—Dr. William Campbell Posey.

Dr. Posey said that hereditary optic neuritis had first been described by Leber in 1871, whence the name, often applied, of Leber's Disease. The disease manifests itself as a retro-bulbar neuritis, usually between the 18th and 23rd years, but as early as the 5th and as late as the 43rd year. Both eyes are affected and loss of sight, which is usually rapid, is dependent upon a central scotoma, the periphery of the field being but rarely involved. While complete blindness has supervened in some cases, the retention of fairly useful vision is general. In the early stages, there are signs of a slight neuritis, later atrophy. Cause of disease is unknown. Dr. Posey was inclined to support Berger's view of an anomaly in the development of the sphenoid, but said the proof of this hypothesis was lacking. In the cases of this dis-

ease which he had seen he doubted the neuropathic element which has been claimed by others as a constant factor in these cases.

Dr. Posey referred to two families in which he had studied the disease. The first of these, which reported to him in 1898, consisted of three males, father, son and maternal uncle. In all three of these, the disease manifested itself at 25 years of age, the resultant vision in all equalling about 5/40. Although all three were addicted to tobacco, it would appear that none indulged in it to a degree sufficient, without the presence of other factors, to inaugurate the disease. Dr. Posey asserted that the possible influence of tobacco should always be considered in the ætiology of hereditary optic nerve atrophy, for while in all likelihood there are other predisposing agents, it is proable that tobacco may be an exciting cause which originates the disease in many instances.

The second family he studied, consisted of the son, aged 16, and the father, aged 51. The disease appeared in both in very early childhood. No other members of the family were affected. Resultant vision in the father was about 5/40 in each eye; in the son 5/35. The father showed characteristic central scotoma. Those in the son were paracentral.

*The Treatment of Retrobulbar Neuritis.*—Dr. T. B. Holloway.

Dr. Holloway, in alluding to the treatment of this affection, stated that he thought there were no ocular affections where the symptoms might be more alarming to the patient than in the acute form of this disease. Owing to the fact that the ætiologic factor is often obscure patients could be better treated if they were placed in an institution where they could be promptly and thoroughly investigated. Owing to the conspicuous role that has been assigned to the accessory sinuses in the production of eye disease, one would naturally insist upon a thorough examination of these structures, and in the event of positive findings prompt and efficient treatment of the same. The same would apply to investigations of the mouth and pharynx. In fact eliminative treatment in this disease is essential whether it is brought about by means of surgical intervention or stimulation of various physiologic functions, such as diaphoresis. For the latter Dr. Holloway prefers the cabinet bath, although pilocarpin or the older method of blankets and hot water bottles might be resorted to. Mercury and iodides would of course be exhibited in those cases where these remedies were especially indicated, but even where

such was not the case inunctions of mercury could well be used, because it was so frequently of service in ocular conditions that were not of specific origin. Sodium salicylate has also proven of service, as has local irritation, sometimes applied behind the ear.

As to the chronic affection, the first thing that would suggest itself would be the immediate removal of the patient from contact with the toxic substance. As far as alcohol and tobacco is concerned, the use of these should be completely stopped and the patient should be cautioned that one cigar or one drink a day might be sufficient to perpetuate the disease. Owing to the frequency with which the use of these drugs is accompanied by disturbances elsewhere in the body, any co-existing affections must receive attention. In the chronic type sweats would prove of the greatest service. For its tonic effect strychnia, either by the mouth or hypodermically, beginning with 1/30 of a grain, should be administered.

Dr. Holloway had never had occasion to resort to brucine, neither had he had any experience with thiosinamine. He used this latter drug some thirteen years ago for conditions other than those existing in the eye, and has never seen the slightest benefit from its use. He had had but little experience with the use of electricity in the treatment of optic atrophies. In a recent case where the high frequency current had been used for a rapidly progressing atrophy occurring in tabes its use had been disastrous.

DR. W. W. WATSON, Secretary.

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Meeting of February 11, 1915.

SYMPOSIUM ON MYOPIA.

*The Causes of Myopia.*—Dr. W. Walter Watson.

Dr. Watson said that the causes of myopia were to be found in the habits that civilization had fixed on man. All changes that lead to myopia, however, were not attributable to close use of the eyes. He arranged several classifications: a variety either congenital or acquired, and a division of causes late anatomical, mechanical, inflammatory, constitutional and traumatic. The congenital form does not signify that near-sighted children are the offspring of myopic parents, but a tendency under the laws

of heredity by which a child inherits from its parents, and more especially myopic parents, the peculiar conformity of skull or weakened tunics of eyes that predispose to its development after birth. Myopia in the embryo by hyperinclusion of the mesoblastic vitreous body into the secondary optic vesicles is uncertain, and the congenital inflammatory types are rare. Myopia exists where parallel rays entering the eyes focus anterior to the retina, therefore it occurs when the antero-posterior diameter is disproportionate to the refractive power of the dioptric media, or when there is an unusual excessive curvature of lens, as in cataract formation, or of the cornea, as in conical cornea. With anatomical causes are placed imperfections of orbit development in the vertical diameter, and the low orbit producing by muscle pressure posterior bulging of the globe. Also the shape of the skull and the size and conicity of the orbit are here considered. Broad heads give wide-set eyes, and shallow deep orbits promote resistance to ocular movements and an anomalous arrangement of the rectus muscles whereby on extreme convergence lateral compression of the globe is produced. This extreme convergence is brought about by demands of civilization, occupation, poor lights in school and workhouse, and small type in print. Associated with this excessive convergence is the excessive accommodation which is in turn encouraged by near vision, for near vision while theoretically possible without much accommodation in the myope, is not usually accomplished. Therefore myopia uncorrected by glasses is a contributing cause to the progressive form. Next in importance were mentioned the inflammatory causes which move toward a devitalization of the tunics and consequent stretching of the eyeball. Contributary causes are: iritis, cyclitis, choroiditis, scleritis, inflammation of adjacent tissue, infectious fevers, diabetes, and interference with the choroidal circulation by pressure on the venæ vorticosæ. Among other causes Dr. Watson mentioned, mild ectatic cicatrices, unusual short optic nerve, alterations of vitreous body changing its index, sclerosing of the crystalline lens, and luxation of the lens, while last but not least he referred to uncorrected astigmatism by reason of its strain on the ciliary muscle with an enduring irritation.

*The Prevention of Myopia.*—Dr. Luther C. Peter.

It is generally conceded that in ninety per cent. of the cases myopia is due to acquired causes. It does not follow, however,

that the ninety per cent. can be prevented. It is difficult to measure just how much one can do to prevent myopia. Donders classifies myopia into three groups. First, stationary; second, temporarily progressive; third, permanently progressive. In the latter group are included the malignant types.

The prevention of myopia resolves itself into a question of hygiene: First, hygiene in the home; second, hygiene in the school; third, industrial hygiene.

In the home hygiene, such measures as will help the child's general health are essential. Roemer likens the condition to rickets, and uses the term "scleral malacia," to express the condition. It seems to me this term is very appropriate. In children, therefore, with myopic tendencies it is essential to pay strict attention to home hygiene, as they inherit the same tendencies and habits which made their parents myopic. Anything that will improve the children's general health is to be encouraged.

Dr. Samuel Risley has called attention to one of the great factors in the development of myopia, that is astigmatism. It is not unusual to see these cases pass from hypermetropia to myopia by the astigmatic route, or as Dr. Risley expresses it, "through the turnstile of astigmatism." I believe that astigmatism has more to do with development of myopia in the first and second of Donders' classes than any other factor. Mixed astigmatism is but an expression of the same tendency, as mixed astigmatism primarily resolves itself into simple hypermetropic astigmatism. It is a well known fact that children are born hypermetropic, that all animal life and savage and semi-civilized tribes are hypermetropic and remain so through life. Myopia is therefore a condition of civilization.

In home hygiene, aside from the general management in the bringing up of the child, I do not think that there is anything especially indicated except the care in home work and the age at which the child shall be sent to school. Home study is not indicated in the average child until it is twelve years of age, and children with myopic tendencies should not be sent to school before they have reached the age of 8 years.

School Hygiene: Since the pioneer work begun by Dr. Samuel Risley in 1881, so much good work has been done in the question of proper lighting of school buildings, arrangement and height of the desks, position of the child, etc., that we need not discuss this phase of the question. Every child should have its

vision taken accurately at least once a year, and efforts should be made by competent persons to determine the presence or absence of astigmatism. These measurements should be made by an ophthalmologist. If astigmatism is present, it should be corrected. The spheric element is not of so much importance at this time of life as the astigmatic error.

Myopic children should have special classification in the school. Their time spent in the school room should be limited and the amount of work required of them should be limited. It is a well known fact that the most progressive period of myopia is from 8 to 15 years; and if the proper care is taken of the child during this period, the progress of myopia can undoubtedly be arrested.

Industrial Hygiene: Industrial hygiene is a matter of education and training. While the average manufacturer is not a humanitarian, he has enough of the humanitarian spirit, when coupled with the usually astute business foresight, to accomplish the object of the betterment of the conditions of the employed without intervention on the part of the physician. The modern factory is built with due consideration for the employed. I believe, however, that there should be a minimum standard of visual acuity in order to obtain the best results. Employees whose vision falls below this standard should be required to wear glasses.

*The Treatment of Myopia.*—Dr. George S. Crampton.

In outlining the treatment of myopia, Dr. Crampton drew attention to the fact that a solution of the proper treatment had been largely reached when due consideration had been given to the ætiology of the condition together with the institution of certain hygienic preventive measures known to successfully combat an increase of the defect.

While a careful refraction under a reliable cycloplegic such as atropin should first receive attention, our responsibility does not cease here, but our efforts should be directed toward the correction of the faulty habits of the patient. We know the myope to be of the student type, the child who prefers to continue with his books during the recess hour in preference to joining his playmates in the vigorous sports which require clear distant vision.

In the progressive types of myopia it is well to prevent all tendency to a stooping position by supporting the printed page

in a vertical manner but a little below the level of the eyes and the patient should live under conditions as far removed as possible from the confining influences and literary environment of civilization.

The balance of the extraocular muscles should be determined, and the myopic tendency to divergence, if present, should be combated by muscle exercises or in certain cases by prisms or operative measures if indicated.

The blood and urine should be examined in search for treatment indications, and the diet should receive attention in order that everything possible may be done to increase the general vitality and muscle tone. A tendency to constipation, if present, should not be overlooked.

Risley, who in 1881 examined a large number of the eyes of children in the Philadelphia schools, concluded that given an emmetropic eye no harm would follow the educational process if proper hygienic measures were adhered to.

That improved hygiene together with the benefits of a prompt correction of the refractive error are bearing fruit can be judged by Widmark's experience in Sweden, who found a reduction in the number of myopes in the schools from about 40 per cent. of all those examined in 1880, to 19 per cent. in 1908.

In London Harman found less than 3 per cent. myopic after the first five years of school life, but there was a decided trend from hyperopic astigmatism to myopia as time went on, indicating that hyperopia was passing over into myopia.

Weeks divides myopes into three classes: (1) Those to whom full correction may be given for all purposes. These are the cases in which not more than two-thirds of the accommodative power will be employed in close work when glasses are worn, the necessity for undue convergence being thus lessened. (2) Cases in which a full correction for distance can be used with comfort, but whose reserve accommodative power in doing close work would be less than one-third. These cases must have weaker glasses for near work than those worn for distant vision. (3) Cases in which the glasses for near vision only can be worn with comfort. These are the victims of high myopia in whom the p.r. is extremely close to the eyes. In these cases the full correction so reduces the size of the image over that to which the patient has been accustomed, that the benefits of clear distance vision are more than outweighed by the annoyance occasioned. Glasses that will remove the p.r. to the ordinary read-

ing distance, namely, 38 to 40 cm., will often be worn with perfect comfort and will be preferred for all distances. A special glass may be provided for occasional use when clear distant vision is desired.

When myopia of high degree has been long neglected it is sometimes found that only a poor approach to normal vision can be had with glasses. This is generally due to choroidal changes following the stretching of all the coats of the eye, but cases are occasionally found where the nerve has become atrophic, and of course we are more or less helpless to improve the condition. Glaucomatous symptoms are also occasionally found in the long eye of myopia and when discovered should be treated with miotics.

Eyes previously emmetropic have been known to become myopic during an attack of glaucoma and have returned to normal after iridectomy. Much has been written in recent years in favor of lens extraction in myopia of high degree, the preferred method of operation seems to be free dicission followed after one or two weeks by evacuation of the lens substance.

Apparently no one advises operation in errors less than 15 diopters, and most authors prefer to reserve operation for cases of a still higher error on account of the resulting hyperopia.

Dr. John H. W. Rhein, by invitation, presented a few cases illustrating Ocular Symptoms in Nervous Diseases.

Case 1.—A man of 43 presented nothing of interest in the family or personal history except that he had spinal meningitis. In 1910 he consulted an oculist for double vision from which he recovered. He remained well until September, 1913, when double vision returned and he complained of pains in his feet. On examination it was found that his knee jerks were normal, his station good, the finger to nose test was performed perfectly well, all forms of sensation were intact and there were no bladder or rectal symptoms. He was referred to the eye department which reported slight palsy of the external rectus only at that time. I did not see him again until comparatively recently when I found upon examination that his pupils were irregular, that the left pupil did not respond to light and the right one only sluggishly. There was also a palsy of the left inferior rectus and left ptosis, otherwise the examination was entirely negative. The Wassermann reaction on several occasions was negative, and I believed that I was dealing with a case of nonspecific Argyll-Robertson pupil.

A number of cases showing Argyll-Robertson pupil have been reported in literature. Felix Rose collected a number of these cases and published them in the *Semaine Médicale,* December, 1912. Only recently I obtained a faintly positive Wassermann reaction in this case and under iodides and mercury the ptosis disappeared and the double vision has almost disappeared. There has been no change, however, in the Argyll-Robertson pupil.

Case 2.—This case is shown mainly on account of one symptom which is present, namely, hemianopsia. He applied April, 1914, to the clinic with the history that a few months previously he suffered from an attack of paralysis of the left side of the body. When he was examined at the clinic the paralysis had disappeared so that he could use his hand in his work and he walked without any evidence of paralysis. The tendon reflexes were increased on both sides and more so on the left. The symptom in this case which was especially interesting was the persistent pain of which he complained in the left arm, leg and face. This led to a diagnosis of hæmorrhage into the optic thalamus which was confirmed by the report from the eye department that he had a hemianopsia. He did not have a typical thalamic syndrome, however, there being no hemiataxia, hemiathetosis or sensory disturbances. This case is an example of central pain. The most frequent seat of injury in these cases is the optic thalamus although the central pain may be present in injury to other parts of the brain.

Case 3.—This is a case of major hysteria. The eye symptoms consisted of hysterical amaurosis, hysterical unilateral ptosis, monocular polyopia and tubular fields. In addition to this she exhibited hemi-hypalgesia paralysis of the anterior tibial group of muscles on the left side and cataleptic attacks. All these symptoms were cured by hypnotism except the polyopia, which still persists. The subject was a girl of 14.

Case 4.—Showed hysterical symptoms mainly on the part of the psychic sphere. She has a morbid interest in her physical sensations, daily has some new symptom consisting of either pains in various localities or believes she has cancer, typhoid fever, some obscure stomach disturbance or whatnot. She has hemi-hypalgesia, but otherwise her physical examination resulted in normal findings. On the part of her eyes she showed marked contraction of the fields of vision with weakness of the muscles of the eye giving rise to double vision. Prof. Reber reported that she had 7 degrees of hyperphoria. All of her symptoms are improving under treatment.

DISCUSSION.

Dr. Samuel D. Risley said that he agreed in most respects entirely with what had been said. There is no chapter in ophthalmology which requires more close work and good judgment than myopia.

Before I published the work on School Hygiene, I had a number of cases in which I myself had seen the astigmatism increase. I found them to have a static myopic refraction. I published them in order to fortify the statistics. You are all familiar with the findings of that report in a general way, and after all these years I have seen nothing that would cause me to change a single thing in that report. The gratifying part about it has been that there has been a steady dropping off in myopic eyes, eyes which had been blind by choroidal atrophy, etc. I think our management of the medical science in these cases has been of more importance than all the operations we have performed.

There are many things to be taken into consideratoin in the treatment of myopia. The myopic eye is a sick eye. They have fluffy eye grounds and dilated arteries. They are uncomfortable, particularly in a way we do not stop to consider. A myopic eye with astigmatism upsets the balance between the eyes, not only the accommodation but it upsets the range and convergence. And it is this fact, I believe, in many cases that accounts for the nervous symptoms we see in patients with this kind of eyes. Therefore I believe cycloplegia should not be used for only an hour and the patient then refracted, but day after day until it often goes into weeks; and having quieted the choroid down by subjective methods, then prescribe glasses. I could relate case after case in which after the vertical deviation was corrected the difficulty disappeared at once.

Dr. William Zentmayer said that while he advocated the full correction of myopia, there are individual cases in which it is either unwise or impossible to follow this procedure. As an illustration of the first he cited cases in which there were myopic changes in the fundus and sick, irritable eyes. In these cases it will often be found that patients are much more comfortable with a partial correction, which gives less bright images. He gave the notes of a patient in whom the expedient of giving a partial correction instead of the full correction which the patient had been wearing changed her from a recluse to useful individual. Finally myopes with considerable esophoria are often more comfortable with a partial correction.

As an illustration of the second, he cited cases of moderately high myopia who had reached the age of 25 to 30 before taking to glasses. These patients rarely can wear full correction with comfort because of deficient accommodative power.

He agreed with Dr. Peter that the accommodative act was not the most important factor in causing increasing myopia. Hyperopias of considerable degree are compelled to use excessive accommodation, but such eyes rarely show the changes met with in the stretching eyes of progressive myopia. Again myopes of 2.50 to 4 D., often use their eyes for near work without glasses and consequently without accommodation, yet such eyes may develop progressive myopia. There is some factor besides the intra- or extra-ocular tension underlying progressive myopia, possibly a malacia of the tunics, sometimes inherited.

W. WALTER WATSON, M.D.,
Secretary.

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## THE SEVENTH PAN-AMERICAN CONGRESS.

The Seventh Pan-American Congress will meet in San Francisco, June 17th-21st inclusive. It assembles pursuant to invition of the President of the United States issued in accordance with an act of Congress approved March 3, 1915.

The countries and colonies embraced in the Congress are the Argentine Republic, Bolivia, Brazil, Canada, Columbia, Cuba, Chile, Costa Rica, El Salvador, Ecuador, Guatamala, Honduras, Haiti, Hawaii, Mexico, Martinique, Nicaragua, Panama, Paraguay, Peru, Santo Domingo, United States, Uruguay, Venezuela, British Guiana, Dutch Guiana, French Guiana, Jamaica, Barbadoes, St. Thomas and St. Vincent. The organization of the Congress is perfected in these countries and the majority of them have signified their intention to be represented by duly accredited delegates.

The Congress will meet in seven sections, viz.: (1) Medicine; (2) Surgery; (3) Obstetrics and Gynecology; (4) Anatomy, Physiology, Pathology and Bacteriology; (5) Tropical Medicine and General Sanitation; (6) Laryngology, Rhinology and Otology; (7) Medical Literature.

All members of the organized medical profession of the constituent countries are eligible and are invited to become mem-

bers. The membership fee is $5.00 and entitles the holder to a complete set of the transactions. Advance registrations are solicited and should be sent with membership fee to the Treasurer, Dr. Henry P. Newman, Timken Building, San Diego, California.

The general railroad rate of one fare for the round trip, good for three months, made on account of the Panama-Pacific Exposition at San Francisco, and the California Exposition at San Diego, is available for the Pan-American Medical Congress.

The Palace Hotel will be headquarters.

The First Pan-American Medical Congress was most successfully held in the United States in 1893. Five intervening Congresses have been held in Latin American countries. It now devolves upon the medical profession of the United States to make this, the seventh, the most successful in the series.

CHARLES A. L. REED, President, Union Central Building, Cincinnati.

RAMON GUITERAS, Secretary General, 80 Madison Ave., New York City.

HARRY M. SHERMAN, Chairman Committee of Arrangements, 350 Post St., San Francisco.

PHILIP MILLS JONES, Special Committee on Hotels, 135 Stockton St., San Francisco.

# ABSTRACTS FROM MEDICAL LITERATURE.

By W. F. Hardy, M.D.,
St. Louis, Mo.

## LIPÆMIA RETINALIS.

R. Foster Moore (*Lancet*, February 20, 1915) records two cases of this condition. He states that the earliest accounts of this trouble are by Rollo of London, 1798, and Mariet of Edinburgh in 1799. The ophthalmoscopic picture was first seen and described by Heyl in 1880. Since then but few cases have been reported. The appearance of the fundus is striking and characteristic, and, as Moore says, is the only means apart from a blood examination of diagnosing the condition of lipæmia. The two patients seen by Moore were suffering with diabetes mellitus. The fundus appearance is described as follows: The abnormal features were almost entirely limited to the appearance of the retinal vessels. They were of a salmon color on the disc and for a short distance beyond, but when traced towards the periphery the color became much less saturated and gradually merged into a cream color with almost no pink tinge. The color of the arteries and veins did not differ at all. In the center of the disc a faint central light streak was seen in the arteries and by this means only could the arteries be distinguished from the veins. Both arteries and veins were well filled. The general tint of the fundus was pale.

Lipæmia is reported as occurring in a number of widely differing diseases, as chronic alcoholism, phthisis, asphyxia, nephritis, phosphorus poisoning, pneumonia, peritonitis, gout, starvation, and diabetes. Moore states that one is tempted to conclude that the change in color of the retinal vessels implies a chemicophysical change in the hæmoglobin. In all the cases reported, in none are the vessels described as being less well filled than normally. Some are reported as full and turgid. Marked lipæmia may be present without any serious interference with vision. Lipæmia retinalis implies a grave condition. Moore found but one case only in which the patient survived after its discovery. While with the general improvement in the patient's condition lipæmia may disappear, it may also disappear towards the end of the patient's life and constitute an omen of grave import. The condition is to be differentiated from the leukæmic retinitis.

Moore gives the result of the examination of the blood. Under the microscope red and white corpuscles were quite normal in appearance. The chemical examination is not yet complete, but it is interesting to note a total absence of B-oxybutyric acid, although the smell of acetone was apparent in the breath, blood and urine of the patient. Moore gives the following conclusions: 1. Lipæmia retinalis occurs in young diabetics who are usually bordering on coma, and it consequently implies an immediately grave prognosis, but recovery from the condition may occur. 2. It implies a high degree of lipæmia, and it is probable that in no condition other than diabetes does lipæmia attain a sufficiently high degree to give rise to the appearance of lipæmia retinalis. 3. Vision may remain unaffected in spite of a very high degree of lipæmia retinalis. 4. The conspicuous changes in color and appearance of the retinal vessels are probably entirely dependent upon the opacity of the plasma and do not indicate a change in the hæmoglobin. 5. Lipæmia retinalis supplies so striking and characteristic an ophthalmoscopic picture that it cannot be overlooked nor mistaken for any other condition.

## MULTIPLE CYSTS IN THE ANTERIOR CHAMBER DERIVED FROM A CONGENITAL CYSTIC GROWTH OF THE CILIARY EPITHELIUM.

W. F. Holmes Spicer and R. Affleck Greeves (Section of Ophthalmology, *Proceedings of the Royal Soc. of Med.*, England, December, 1914) give the clinical history and microscopical findings of an eye of a 16 months old child in which appeared multiple cysts in the anterior chamber and other parts of the eye. Of most importance and of greatest interest are the pathological findings of Mr. Greeves. In discussing the paper, Treacher Collins truly stated that this interesting case furnished an example how pathology helped to explain embryological processes. It was formerly thought that the vitreous was of mesoblastic origin, but of late embryologists have regarded it as derived from neural epiblast. Mr. Greeves' specimen bore out this view very conclusively. It further demonstrated not only that the vitreous was derived from the secondary optic vesicle but that it came from only the front part. The description by Mr. Greeves does not lend itself to abstract. The main features are that the globe was considerably enlarged, cornea intact, but a marked local scleral ectasia in the ciliary region up and out. The angle of the an-

terior chamber was completely occluded by a wide peripheral synechia and the papilla was deeply cupped. Three small free cysts were found in the vitreous, the lens being almost entirely absorbed. Several free cysts occupied the anterior chamber. The cyst wall was found to be made up of cell nuclei, contained a delicate supporting substance; these structures were of such a nature and arranged in such a way that the membrane forming the cyst wall bore a striking resemblance to embryonic retina at about the sixth or seventh week of fœtal life. Sections through the globe showed the condition to be one of new growth of the unpigmented layer of the epithelium of the ciliary body. Greeves describes in detail the microscopical formation of this new growth. The cysts proper were both fixed and free, and apparently were able to arise from any part of the growth or cell membranes. The cyst wall in places was reduced to a single row of cells and in others, especially in the larger cysts, large necrotic areas appeared. Necrosis was not surprising owing to the complete absence of any vascular supply in any part of the growth, including the parent mass. The contents of the cysts were of a remarkable nature. Many, both fixed and free, contained a fibrillar substance very closely resembling the normal vitreous body in structure. The fibrils of this substance occurred in long strands which in the youngest cysts had a coiled-up appearance, but in the older ones were irregularly arranged. There was no resemblance to the pseudo fibrils of a coagulum. The walls of a few of the cysts appeared to be turned inside out, so that the limiting membrane was found lining the lumen instead of encircling the outside of the cyst. The arrangement of the structures here was the same as in the other cysts, except that they were inverted. These particular cysts never showed any vitreous-like contents.

Greeves regards his case, unique, clinically. It is the fifth of its kind on record. Because of scleral invasion Fuchs classifies them among the malignant tumors. The present case shows two outstanding differences from all the rest: (1) Multiple, fully formed cysts became severed from the parent growth; and appeared clinically as free bodies in the anterior chamber. (2) While blood vessels, though scanty, were present in the growth in all the other cases, they were absent from the parts of the growth in the present case. In this particular the growth differs markedly from a glioma of the pars optica retinæ. An appropriate name is difficult to find. Greeves designates it as an embryonic

retinal new growth of the unpigmented ciliary epithelium. Treacher Collins further in discussion stated that Mr. Greeves had demonstrated that vitreous humor was present in these cysts, derived from the pars ciliaris retinæ. In sections of gliomata of pars optica retinæ a new formation of vitreus tissue was never found. It appeared therefore that vitreus humor was formed by the pars ciliaris retinæ. Twelve illustrations accompany the article.

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## BOOK REVIEWS.

THE AMERICAN ENCYCLOPÆDIA AND DICTIONARY OF OPHTHALMOLOGY. Edited by Casey A. Wood, M.D., C.M., D.C.L. Assisted by a large staff of collaborators. Fully illustrated. Volume V. Conjunctivitis phlyctenulosa pustulosa to dioptrics. Chicago, Cleveland Press, 1914.

While this volume of the encyclopædia accidentally does not contain articles of the size of actual books, it is full of most interesting material. The largest article is one by Allport on conservation of vision in which school hygiene, illumination and artificial illumination are fully discussed and the most modern ideas are given their important place. The same is the case with injuries to the eyes of working men, poisoning by alkohol, tobacco and drugs, and so on. Of especial importance are, also, the articles on ulcer of the cornea and transplantation of the cornea. A very excellent article is the one on the development of the eyes, by Gradle. But while we here draw attention especially to the larger articles the wealth of information contained in this volume lies rather in the smaller articles without number, the catchwords of which begin with the letters C or D. Of especial interest and value are the biographical sketches from Shastid's fluent pen. All of them bear the mark of a labor of love which makes them doubly valuable. The one on Daviel, which is very fully illustrated, is especially complete.

Editor and publisher alike are to be congratulated on the appearance of this volume, as they were with the previous ones.

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